What is claimed is:

1. An isolated polynucleotide selected from the group consisting of (a) a *dwf5-1* polynucleotide comprising the *dwf5-1* nucleotide sequence depicted in Figure 7; (b) a *dwf5-2* polynucleotide comprising the *dwf5-2* nucleotide sequence depicted in Figure 7; (c) a *dwf5-3* polynucleotide comprising the *dwf5-3* nucleotide sequence depicted in Figure 7; (d) a *dwf5-4* polynucleotide comprising the *dwf5-4* nucleotide sequence depicted in Figure 7; (e) a *dwf5-5* polynucleotide comprising the *dwf5-5* nucleotide sequence depicted in Figure 7; (f) a *dwf5-6* polynucleotide comprising the *dwf5-6* nucleotide sequence depicted in Figure 7; (g) a DWF5 polynucleotide comprising the genomic DWF5 sequence depicted in Figure 7; (h) a polynucleotide comprising a nucleotide sequence having at least about 50% sequence identity to the nucleotide sequence of (a), (b), (c), (d), (e), (f) or (g); (i) a fragment of (a), (b), (c), (d), (e), (f), (g) or (h) comprising at least about 15 contiguous nucleotides therefrom; and (j) complements or reverse complements of (a), (b), (c), (d), (e), (f), (g), (h) or (i).

2. The isolated polynucleotide of claim 1, wherein said polynucleotide imparts at least one *dwf5* mutant phenotype when expressed in a plant.

3. The isolated polynucleotide of claim 1 comprising at least 30 contiguous nucleotides of (a), (b), (c), (d), (e), (f), (g) or (h).

4. An isolated polynucleotide selected from the group consisting of (a) a polynucleotide comprising a nucleotide sequence having at least about 50% sequence identity to the genomic DWF5 sequence depicted in Figure 7; (b) a fragment of (a) comprising at least about 15 contiguous nucleotides therefrom; and (c) complements or reverse complements of (a) or (b).

5. The isolated polynucleotide of claim 4 comprising at least 30 contiguous nucleotides of (a) or (b).

6. An isolated polynucleotide selected from the group consisting of (a) a polynucleotide comprising the nucleotide sequence depicted at nucleotide positions 1-633 of Figure 7; (b) a polynucleotide comprising the nucleotide sequence depicted at nucleotide positions 634-670 of Figure 7; (c) a polynucleotide comprising the nucleotide sequence depicted at nucleotide positions 4045-4243 of Figure 7; (d) a polynucleotide comprising an intron sequence as depicted in Figure 7; (e) a polynucleotide comprising a nucleotide sequence having at least about 50% sequence identity to the nucleotide sequence of (a), (b), (c) or (d); (f) a fragment of (a), (b), (c), (d) or (e) comprising at least about 15 contiguous nucleotides therefrom; and (g) complements or reverse complements of (a), (b), (c), (d), (e) or (f).

7. The isolated polynucleotide of claim 6 comprising at least 30 contiguous nucleotides of (a), (b), (c), (d) or (e).

8. A recombinant vector comprising (i) the polynucleotide of any of claims 1-5; and (ii) control elements operably linked to said polynucleotide whereby a coding sequence within said polynucleotide can be transcribed and translated in a host cell.

9. A recombinant vector comprising: (i) a polynucleotide of any of claims 6 and 7 which includes a DWF5 control element; and (ii) a heterologous coding sequence operably linked to said polynucleotide.

10. A host cell comprising the recombinant vector of claim 8.

11. A host cell comprising the recombinant vector of claim 9.

12. A method of producing a recombinant polypeptide comprising:

(a) providing a host cell according to claim 10; and

(b) culturing said host cell under conditions whereby a recombinant polypeptide encoded by the coding sequence present in said recombinant vector is expressed.

13. A method of producing a recombinant polypeptide comprising:

(a) providing a host cell according to claim 11; and

(b) culturing said host cell under conditions whereby a recombinant polypeptide encoded by the coding sequence present in said recombinant vector is expressed.

14. A transgenic plant comprising the polynucleotide of claim 1.

15. A method of producing a transgenic plant comprising:

(a) introducing the polynucleotide of claim 1 into a plant cell to produce a transformed plant cell; and

(b) producing a transgenic plant from the transformed plant cell.

16. A method of producing a transgenic plant comprising:

(a) introducing the recombinant vector of claim 8 into a plant cell to produce a transformed plant cell; and

(b) producing a transgenic plant from the transformed plant cell.

17. A method of producing a transgenic plant comprising:

(a) introducing the recombinant vector of claim 9 into a plant cell to produce a transformed plant cell; and

(b) producing a transgenic plant from the transformed plant cell.

18. A method for producing a transgenic plant having an altered phenotype relative to the corresponding wild-type plant comprising:

(a) introducing the polynucleotide of claim 1 into a plant cell; and

(b) producing a transgenic plant from the plant cell, said transgenic plant having an altered phenotype relative to the corresponding wild-type plant.

19. The method of claim 18, wherein the phenotype is altered sterol Δ^7 reductase activity.

20. The method of claim 18, wherein the polynucleotide is operably linked to a promoter selected from the group consisting of a tissue-specific promoter, an inducible promoter and a constitutive promoter.

21. The method of claim 18, wherein the polynucleotide is overexpressed.

22. The method of claim 18, wherein the polynucleotide inhibits expression of *dwf5*.

23. The method of claim 18, wherein at least first and second polynucleotides are introduced into the plant cell, said first and second polynucleotides operably linked to at least first and second tissue-specific promoters, wherein said first polynucleotide is overexpressed and said second polynucleotide inhibits expression of *dwf5*.

24. A method of modulating an endogenous DWF5 polypeptide in a transgenic plant comprising providing a polynucleotide according to claim 1.

25. The method of claim 24, wherein the polynucleotide is overexpressed.

26. The method of claim 24, wherein expression of the polynucleotide is inhibited.

27. A method for altering the biochemical activity of a cell comprising:

(a) introducing at least one polynucleotide according to claim 1 into the cell; and

(b) causing expression of said polynucleotide such that the biochemical activity of the cell is altered.

28. The method of claim 27, wherein the biochemical activity is selected from the group consisting of altered sterol Δ^7 reductase activity and altered sterol composition.

29. The method of claim 27, wherein the polynucleotide is introduced into the cell *ex vivo*.

30. The method of claim 27, wherein the polynucleotide is introduced into the cell *in vivo*.

31. The method of claim 27, wherein more than one *dwf5* polynucleotide is provided to the cell.

32. A method for regulating the cell cycle of a plant cell comprising:

(a) providing a polynucleotide according to claim 1 to a plant cell; and

(b) expressing the polynucleotide to provide a DWF5 polypeptide, wherein the DWF5 polypeptide is provided in amounts such that cell cycling is regulated.

33. The method of claim 32, wherein the plant cell is provided *in vitro* and is cultured under conditions suitable for expressing the DWF5 polypeptide.

34. The method of claim 32, wherein the polynucleotide is provided *in vivo*.

35. A method of modulating mRNA levels in a plant cell comprising:

(a) providing a plant cell; and

(b) introducing the recombinant vector of claim 9 into the plant cell to produce a transformed plant cell.

36. The method of claim 35, wherein the plant cell is from a plant tissue selected from the group consisting of the shoot apex and unopened flower (SAF), stem, mature silique, pedicel, rosette leaf, root, dark-grown seedling and callus.

37. The method of claim 35, wherein the recombinant vector is introduced into the plant cell *in vitro*.

38. The method of claim 35, wherein the recombinant vector is introduced into the plant cell *in vivo*.

39. A chimeric polypeptide comprising a first amino acid sequence of a DWF5 polypeptide and a second amino acid sequence of a heterologous polypeptide.